

FIG. 2

FIG. 2P

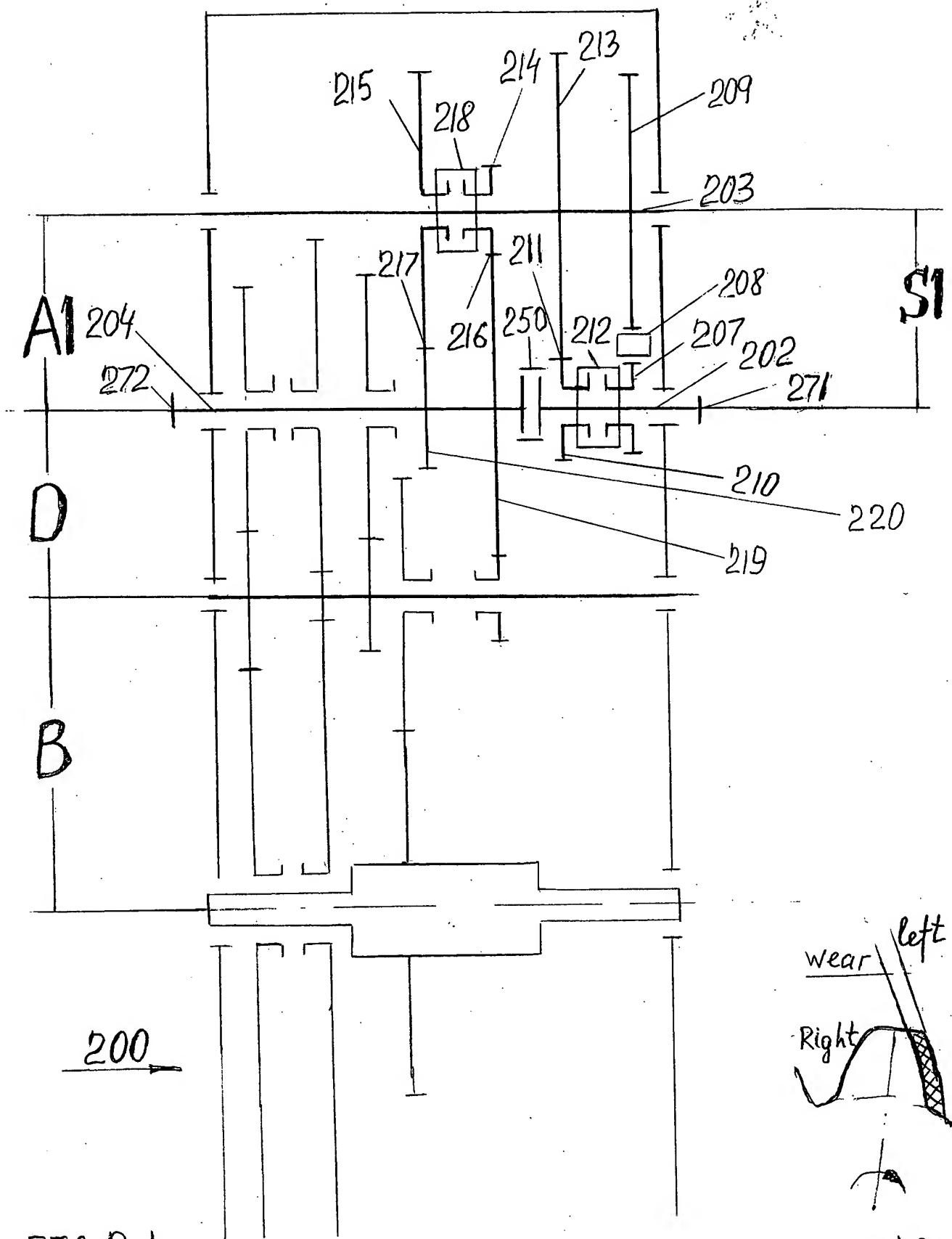
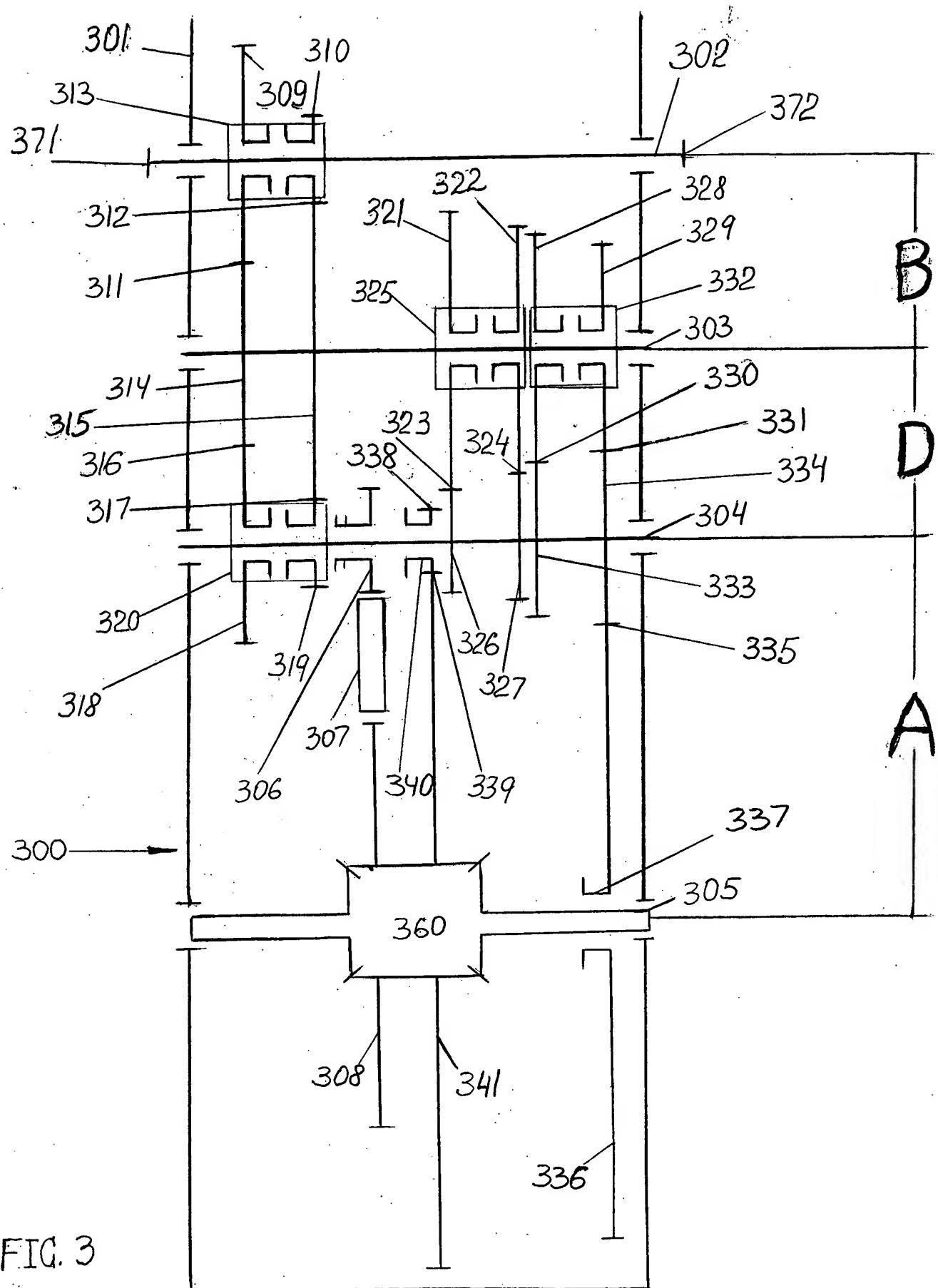


FIG. 2.1

FIG. 2.1P



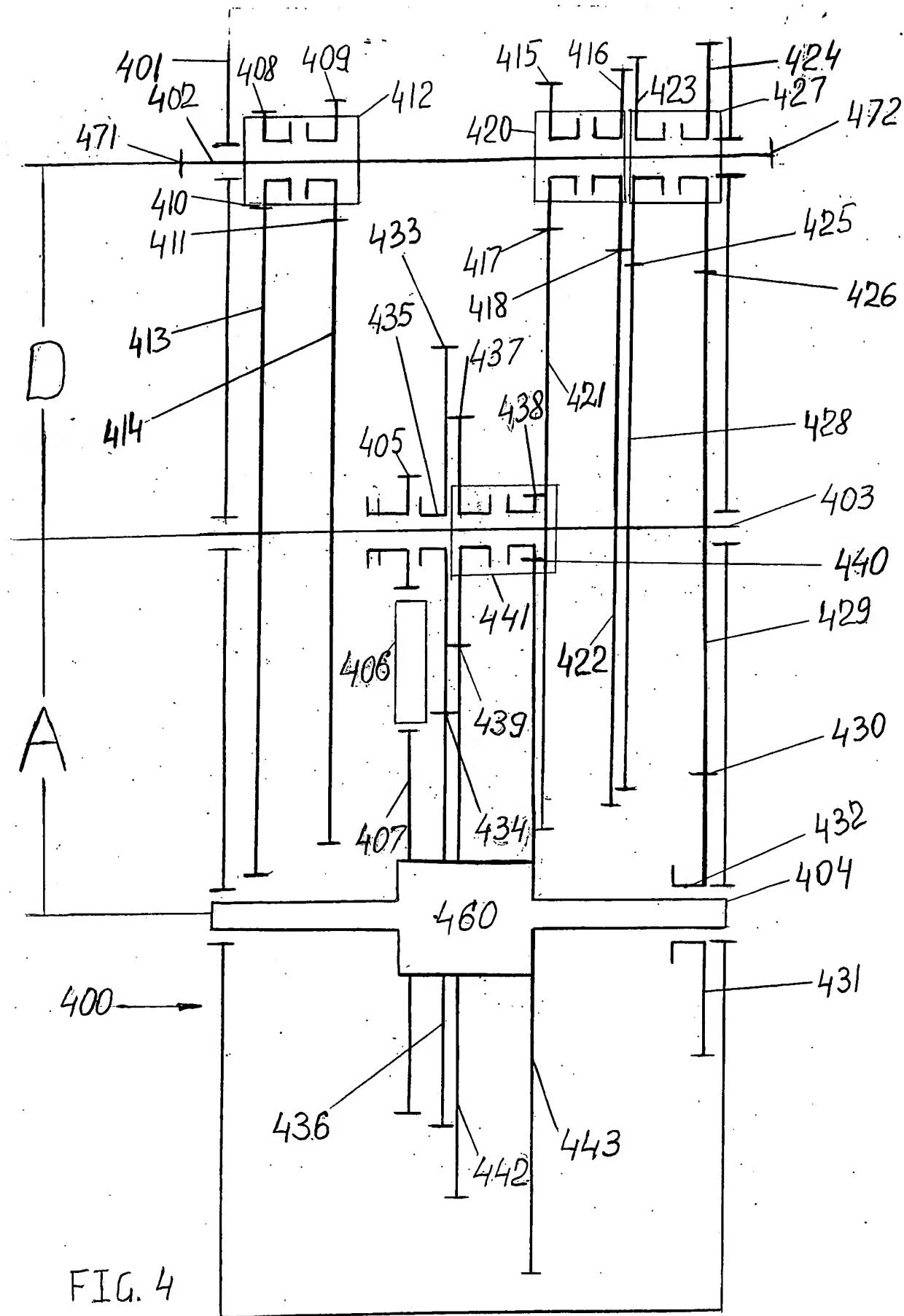
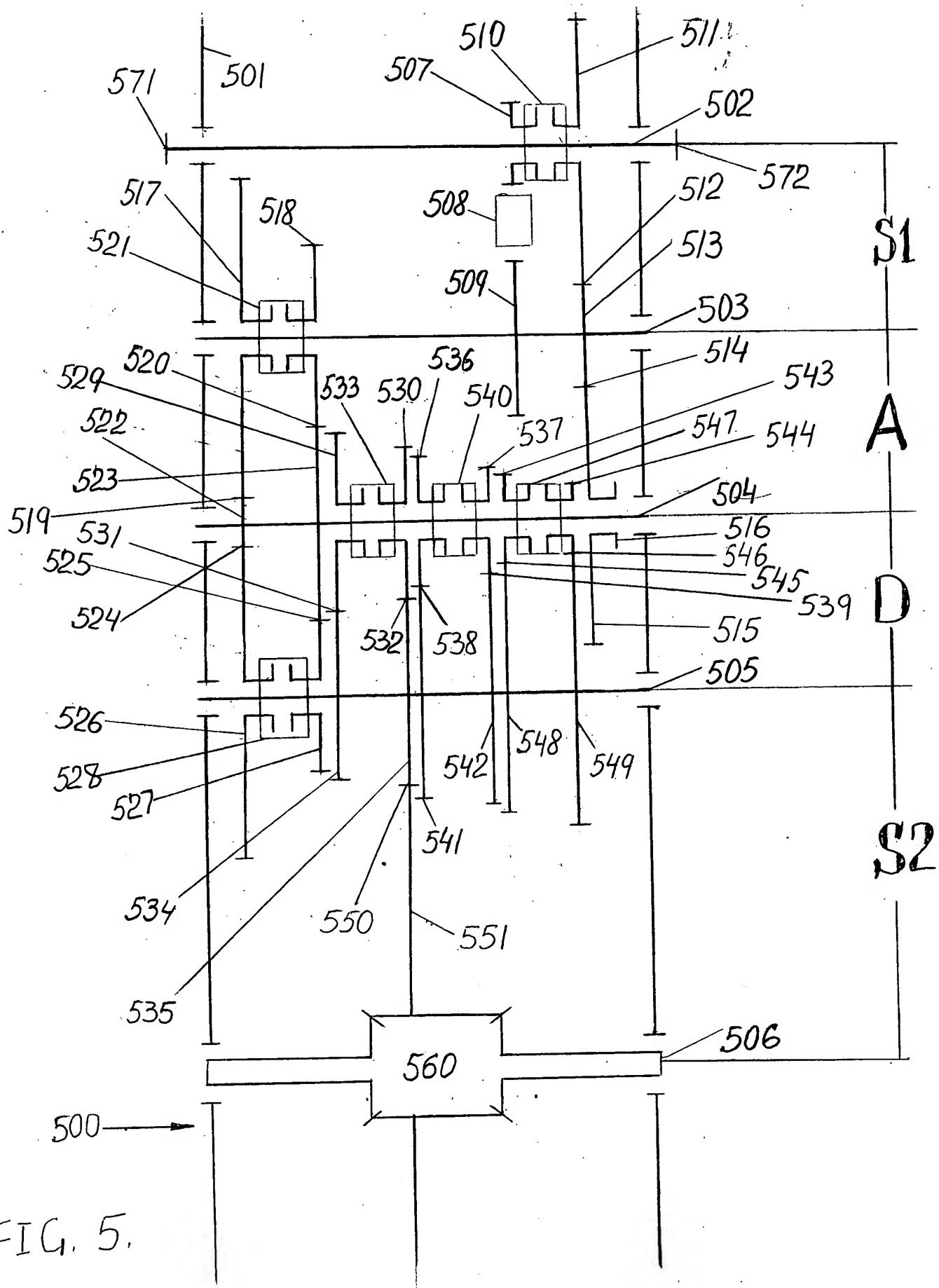


FIG. 4



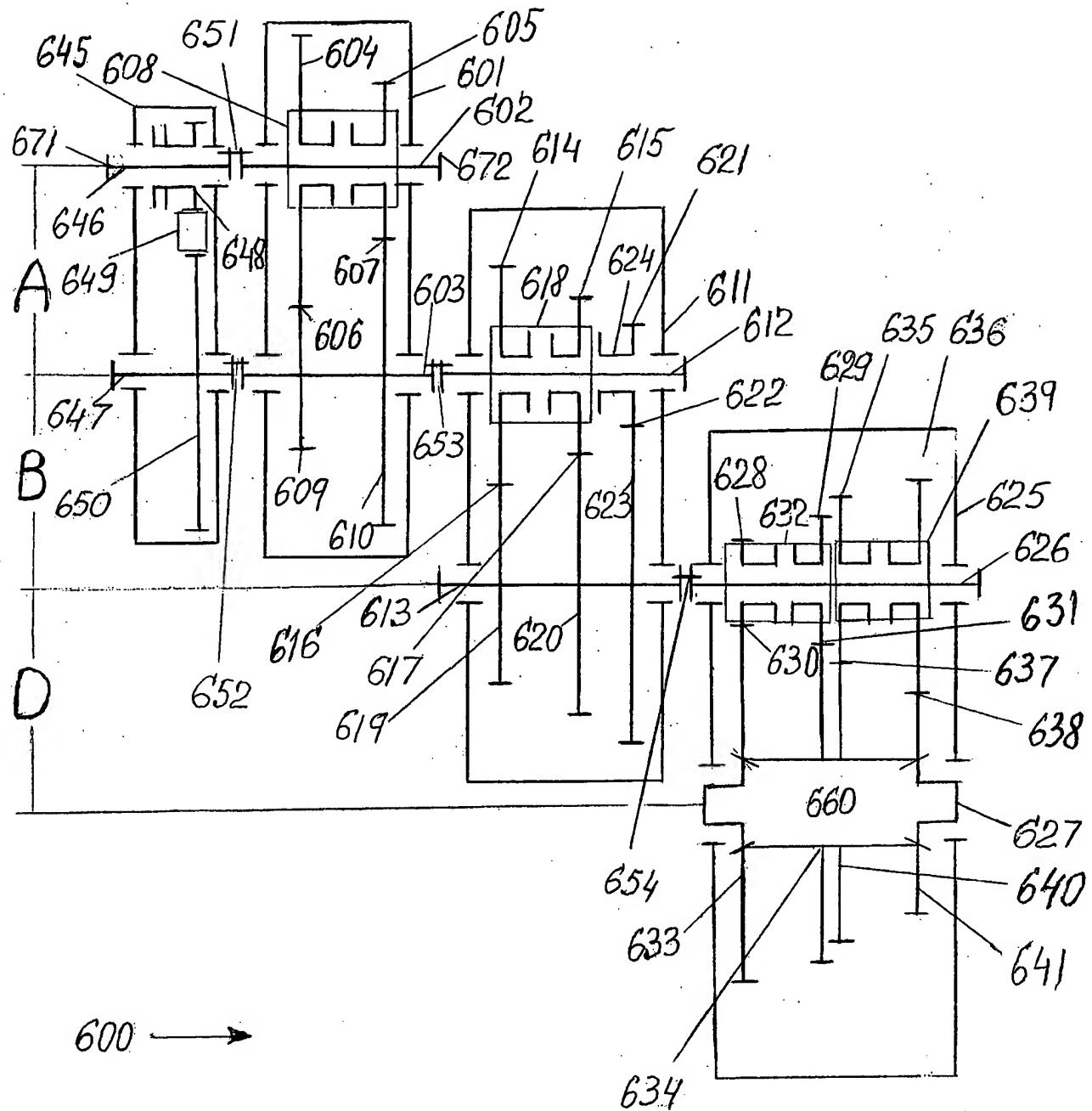


FIG. 6

FIG. 1A
COMBINATIONS OF ENGAGABLE PINIONS

FORWARD TORQUES	2 PINIONS GROUP C	3 PINIONS GROUP D	2 PINIONS GROUP B	2 PINIONS GROUP A	REVERSE TORQUES	PINION
1	111	119	133	129	1	107
2	111	122	133	129	2	107
3	111	120	133	129	3	107
4	110	119	133	129		
5	110	122	133	129		
6	110	120	133	129		
7	111	119	127	129	4	107
8	111	122	127	129	5	107
9	111	120	127	129	6	107
10	110	119	127	129		
11	110	122	127	129		
12	110	120	127	129		
13	111	119	133	138	7	107
14	111	122	133	138	8	107
15	111	120	133	138	9	107
16	110	119	133	138		
17	110	122	133	138		
18	110	120	133	138		
19	111	119	127	138	10	107
20	111	122	127	138	11	107
21	111	120	127	138	12	107
22	110	119	127	138		
23	110	122	127	138		
24	110	120	127	138		

FIG. 1B

GROUP A 2 GEARSETS GEARSET#/ RATIO	GROUP B 2 GEARSETS GEARSET#/ RATIO	GROUP C 2 GEARSETS GEARSET#/ RATIO	GROUP D 3 GEARSETS GEARSET#/ RATIO
137/1	126 / 1/R ²	112 / 1	118 / R ²
130 / 1/R ¹²	134 / 1/R ⁸	113 / 1/R ³	123 / R
			117 / 1

FIG. 2A
COMBINATIONS OF ENGAGABLE PINIONS

FORWARD TORQUES	3 PINIONS GROUP B	4 PINIONS GROUP D	2 PINIONS GROUP A	1 PINION GROUP S	REVERSE TORQUES	PINION
1	237	229	214	210	1	207
2	237	224	214	210	2	207
3	237	222	214	210	3	207
4	237	228	214	210	4	207
5	238	229	214	210	5	207
6	238	224	214	210	6	207
7	238	222	214	210	7	207
8	238	228	214	210	8	207
9	240	229	214	210	9	207
10	240	224	214	210	10	207
11	240	222	214	210	11	207
12	240	228	214	210	12	207
13	237	229	215	210	13	207
14	237	224	215	210	14	207
15	237	222	215	210	15	207
16	237	228	215	210	16	207
17	238	229	215	210	17	207
18	238	224	215	210	18	207
19	238	222	215	210	19	207
20	238	228	215	210	20	207
21	240	229	215	210	21	207
22	240	224	215	210	22	207
23	240	222	215	210	23	207
24	240	228	215	210	24	207

FIG. 2B

GROUP A 2 GEARSETS GEARSET#/ RATIO	GROUP B 3 GEARSETS GEARSET#/ / RATIO	GROUP D 4 GEARSETS GEARSET#/ / RATIO	GROUP S 1 GEARSET GEARSET#/ / RATIO
217 / 1	241 / 1	230 / R ⁸	211 / 1/R ¹²
216 / 1/R ¹²	236 / 1/R ⁴	231 / R ⁵	
	235 / 1/R ⁸	225 / R ⁶	
		221 / R ⁷	

FIG. 2E
COMBINATIONS OF ENGAGABLE PINIONS FOR WORKING ORGAN

FORWARD TORQUES	1 PINION GROUP S	2 PINIONS GROUP B	REVERSE TORQUES	PINION
1	210	214	1	207
2	210	215	2	207

FIG. 2F

GROUP A 2 GEARSETS GEARSET#/ RATIO	GROUP S 1 GEARSET GEARSET#/ RATIO
217 / 1	211 / 1/R ¹²
216 / 1/R ¹²	

FIG. 2.1E
DRIVE OPPOSITE SHAFT WITH COMBINATIONS OF ENGAGABLE PINIONS FOR WORKING ORGAN

FORWARD TORQUES	2 PINIONS GROUP A1	1 PINION GROUP S1	REVERSE TORQUES	PINION
1	214	210	1	207
2	215	210	2	207

FIG. 2.1F

GROUP A1 2 GEARSETS GEARSET#/ RATIO	GROUP S1 1 GEARSET GEARSET#/ RATIO
217 / 1	211 / R ¹²
216 / -R ¹²	

FIG. 2C
COMBINATIONS OF ENGAGABLE PINIONS
AFTER JOIN TWO SPLIT SHAFTS

FORWARD TORQUES	3 PINIONS GROUP B	4 PINIONS GROUP D
25	237	229
26	237	224
27	237	222
28	237	228
29	238	229
30	238	224
31	238	222
32	238	228
33	240	229
34	240	224
35	240	222
36	240	228

FIG. 2D

GROUP B 3 GEARSETS GEARSET# / RATIO	GROUP D 4 GEARSETS GEARSET# / RATIO
241 / 1	230 / R ⁸
236 / 1/R ⁴	231 / R ⁵
235 / 1/R ⁸	225 / R ⁶
	221 / R ⁷

FIG. 2.1A
DRIVE OPPOSITE SHAFT WITH COMBINATIONS
OF ENGAGABLE PINIONS

FORWARD TORQUES	3 PINIONS GROUP B	4 PINIONS GROUP D
1	237	229
2	237	224
3	237	222
4	237	228
5	238	229
6	238	224
7	238	222
8	238	228
9	240	229
10	240	224
11	240	222
12	240	228

FIG. 2.1B

GROUP B 3 GEARSETS GEARSET# / RATIO	GROUP D 4 GEARSETS GEARSET# / RATIO
241 / 1	230 / R ⁸
236 / 1/R ⁴	231 / R ⁵
235 / 1/R ⁸	225 / R ⁶
	221 / R ⁷

FIG. 3A
COMBINATIONS OF ENGAGABLE PINIONS

FORWARD TORQUES	2 PINIONS GROUP B	6 PINIONS GROUP D	2 PINIONS GROUP A	REVERSE TORQUES	PINION
1	310	319	338	1	306
2	310	329	338	2	306
3	310	328	338	3	306
4	310	322	338		
5	310	321	338		
6	310	318	338		
7	309	319	338	4	306
8	309	329	338	5	306
9	309	328	338	6	306
10	309	322	338		
11	309	321	338		
12	309	318	338		
13	310	319	336	7	306
14	310	329	336	8	306
15	310	328	336	9	306
16	310	322	336		
17	310	321	336		
18	310	318	336		
19	309	319	336	10	306
20	309	329	336	11	306
21	309	328	336	12	306
22	309	322	336		
23	309	321	336		
24	309	318	336		

FIG. 3B

GROUP A 2 GEARSETS GEARSET#/ RATIO	GROUP B 2 GEARSETS GEARSET#/ RATIO	GROUP D 6 GEARSETS GEARSET#/ RATIO
$335 / 1/R^5$	311 / 1	$317 / R^5$
$339 / 1/R^{17}$	$312 / 1/R^6$	$323 / R^4$
		$324 / R^3$
		$330 / R^2$
		$331 / R$
		316 / 1

FIG. 4A
COMBINATIONS OF ENGAGABLE PINIONS

FORWARD TORQUES	6 PINIONS GROUP D	4 PINIONS GROUP A	REVERSE TORQUES	PINION
1	408	438	1	405
2	409	438		
3	415	438		
4	416	438		
5	423	438	2	405
6	424	438		
7	408	437		
8	409	437		
9	415	437	3	405
10	416	437		
11	423	437		
12	424	437		
13	408	433	4	405
14	409	433		
15	415	433		
16	416	433		
17	423	433	5	405
18	424	433		
19	408	431		
20	409	431		
21	415	431	6	405
22	416	431		
23	423	431		
24	424	431		

FIG. 4B

GROUP A 4 GEARSETS GEARSET#/ / RATIO	GROUP D 6 GEARSETS GEARSET#/ / RATIO
430 / R ⁶	426 / 1/R ⁶
434 / 1	425 / 1/R ⁷
439 / 1/R ⁶	418 / 1 /R ⁸
440 / 1/R ¹²	417 /1/R ⁹
	411 / 1/R ¹⁰
	410 /1/R ¹¹

FIG. 5A
COMBINATIONS OF ENGAGABLE PINIONS

FORWARD TORQUES	1 PINION GROUP S1	8 PINIONS GROUP D	3 PINIONS GROUP A	1 PINION GROUP S2	REVERSE TORQUES	PINION
1	511	526	515	535	1	507
2	511	544	515	535	2	507
3	511	543	515	535	3	507
4	511	537	515	535	4	507
5	511	536	515	535	5	507
6	511	530	515	535	6	507
7	511	529	515	535	7	507
8	511	527	515	535	8	507
9	511	526	518	535	9	507
10	511	544	518	535	10	507
11	511	543	518	535	11	507
12	511	537	518	535	12	507
13	511	536	518	535	13	507
14	511	530	518	535	14	507
15	511	529	518	535	15	507
16	511	527	518	535	16	507
17	511	526	517	535	17	507
18	511	544	517	535	18	507
19	511	543	517	535	19	507
20	511	537	517	535	20	507
21	511	536	517	535	21	507
22	511	530	517	535	22	507
23	511	529	517	535	23	507
24	511	527	517	535	24	507

FIG. 5B

GROUP S1 1 GEARSET GEARSET#/ / RATIO	GROUP A 3 GEARSETS GEARSET#/ / RATIO	GROUP D 8 GEARSETS GEARSET#/ / RATIO	GROUP S2 1 GEARSET GEARSET#/ / RATIO
512 / R ³	519 / R ⁸	525 / 1/R	550 / 1/R ¹⁰
	520 / 1	531 / 1/R ²	
	514 / 1/R ⁸	532 / 1/R ³	
		538 / 1/R ⁴	
		539 / 1/R ⁵	
		545 / 1/R ⁶	
		546 / 1/R ⁷	
		524 / 1/R ⁸	

FIG. 6A
COMBINATIONS OF ENGAGABLE PINIONS

FORWARD TORQUES	2 PINIONS GROUP A	3 PINIONS GROUP B	4 PINIONS GROUP D	REVERSE TORQUES	PINION
1	605	621	628	1	648
2	605	621	629	2	648
3	605	621	635	3	648
4	605	621	636		
5	605	615	628		
6	605	615	629		
7	605	615	635	4	648
8	605	615	636	5	648
9	605	614	628	6	648
10	605	614	629		
11	605	614	635		
12	605	614	636		
13	604	621	628	7	648
14	604	621	629	8	648
15	604	621	635	9	648
16	604	621	636		
17	604	615	628		
18	604	615	629		
19	604	615	635	10	648
20	604	615	636	11	648
21	604	614	628	12	648
22	604	614	629		
23	604	614	635		
24	604	614	636		

FIG. 6B

GROUP A 2 GEARSETS GEARSET#/ / RATIO	GROUP B 3 GEARSETS GEARSET#/ / RATIO	GROUP D 4 GEARSETS GEARSET#/ / RATIO
606 / R ⁶	616 / 1	638 / 1/R ⁶
607 / 1/R ⁶	617 / 1/R ⁴	637 / 1/R ⁷
	622 / 1/R ⁸	631 / 1/R ⁸
		630 / 1/R ⁹